

4WD-RPB

SUBJ: Evaluation of Owens-Corning Fiberglass Corporation status under the RCRIS
Corrective Action Environmental Indicator Event Code CA725
EPA I.D. Number: SCD 003 349 982

FROM: Channing Bennett
North Permitting Section

THRU: Caron Falconer *CF 8/13/02*
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Chief, North Permitting Section
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Chief, RCRA Program Branch
Waste Management Division

I. PURPOSE OF MEMO

This memo is written to formalize an evaluation of Owens-Corning Fiberglass Corporation status in relation to the following corrective action event codes defined in the Resource Conservation and Recovery Information System (RCRIS):

- 1) Current Human Exposures Under Control (CA725),
- 2) Migration of Contaminated Groundwater Under Control (CA750).

Concurrence by the RCRA Programs Branch Chief is required prior to entering these event codes into RCRIS. Your concurrence with the interpretations provided in the following paragraphs and the subsequent recommendations is satisfied by dating and signing at the appropriate location within Attachment 1.

DOCUMENTATION OF ENVIRONMENTAL INDICATOR DETERMINATION

RCRA Corrective Action Environmental Indicator (EI) RCRIS code (CA725)

Current Human Exposures Under Control

Facility Name: Owens-Corning Fiberglass Corporation
Facility Address: Highway 81 South, Anderson, South Carolina 29622
Facility EPA ID#: SCD003349982

1. Has **all** available relevant/significant information on known and reasonably suspected releases to soil, groundwater, surface water/sediments, and air, subject to RCRA Corrective Action (e.g., from Solid Waste Management Units (SWMU), Regulated Units (RU), and Areas of Concern (AOC)), been **considered** in this EI determination?

 X If yes - check here and continue with #2 below.
 If no - re-evaluate existing data, or
 If data are not available skip to #6 and enter "IN" (more information needed) status code.

BACKGROUND

Definition of Environmental Indicators (for the RCRA Corrective Action)

Environmental Indicators (EI) are measures being used by the RCRA Corrective Action program to go beyond programmatic activity measures (e.g., reports received and approved, etc.) to track changes in the quality of the environment. The two EI developed to-date indicate the quality of the environment in relation to current human exposures to contamination and the migration of contaminated groundwater. An EI for non-human (ecological) receptors is intended to be developed in the future.

Definition of "Current Human Exposures Under Control" EI

A positive "Current Human Exposures Under Control" EI determination ("YE" status code) indicates that there are no "unacceptable" human exposures to "contamination" (i.e., contaminants in concentrations in excess of appropriate risk-based levels) that can be reasonably expected under current land- and groundwater-use conditions (for all "contamination" subject to RCRA corrective action at or from the identified facility (i.e., site-wide)).

Relationship of EI to Final Remedies

While Final remedies remain the long-term objective of the RCRA Corrective Action program, the EI are near-term objectives which are currently being used as Program measures for the Government Performance and Results Act of 1993, GPRA). The "Current Human Exposures Under Control" EI are for reasonably expected human exposures under current land- and groundwater-use conditions ONLY, and do not consider potential future land- or groundwater-use conditions or ecological receptors. The RCRA Corrective Action program's overall mission to protect human health and the environment requires that Final remedies address these issues (i.e., potential future human exposure scenarios, future land and groundwater uses, and ecological receptors).

Duration / Applicability of EI Determinations

EI Determinations status codes should remain in RCRIS national database ONLY as long as they remain true (i.e., RCRIS status codes must be changed when the regulatory authorities become aware of contrary information).

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2. Are groundwater, soil, surface water, sediments, or air **media** known or reasonably suspected to be "**contaminated**" above appropriately protective risk-based "levels" (applicable promulgated standards, as well as other appropriate standards, guidelines, guidance, or criteria) from releases subject to RCRA Corrective Action (from SWMUs, RUs or AOCs)?

	<u>Yes</u>	<u>No</u>	<u>?</u>	<u>Rationale/Key Contaminants</u>
Groundwater	Y			Investigation data/ PCE, TCE, 1,1-DCE, VC, carbon tetrachloride (CT), methylene chloride, 1,1,1-TCA, 1,2-DCA, fluoride, beryllium, chromium
Air (indoors) ²		N		Personnel monitoring, Investigation data
Surface Soil (e.g., <2 ft)		N		Investigation data, Interim Measures with confirmation sampling
Surface Water	Y			Investigation data/CT, 1,1-DCE, VC
Sediment		N		Investigation data, Risk Assessment/PCB
Subsurf. Soil (e.g., >2 ft)		N		Interim Measures with confirmation sampling
Air (outdoors)		N		Investigation data

_____ If no (for all media) - skip to #6, and enter "YE," status code after providing or citing appropriate "levels," and referencing sufficient supporting documentation demonstrating that these "levels" are not exceeded.

Y If yes (for any media) - continue after identifying key contaminants in each "contaminated" medium, citing appropriate "levels" (or provide an explanation for the determination that the medium could pose an unacceptable risk), and referencing supporting documentation.

_____ If unknown (for any media) - skip to #6 and enter "IN" status code.

Rationale and Reference(s):

Owens Corning conducted a multi-phase RCRA Facility Investigation (RFI) to meet the requirements of the Consent Order (U.S. EPA Docket No. 89-34-R, September 29, 1989) between Owens Corning Fiberglass Corporation and the U.S. EPA. Phase 1 investigations were completed per the RFI Work Plan (Engineering Science [ES] 1990) and a Draft RFI Report was submitted in April 1991 (ES 1991). Two addenda to the work plan were prepared (ES, November 1991 and July 1993) and these additional RFI investigations were completed between July 1992 and July 1993 (Owens Corning 1995a). The U.S. EPA approved the draft RFI in September 1995 (U.S. EPA 1995). Nine solid waste management units (SWMUs, sometimes referred to as sites) were investigated during the RFI to determine if releases of hazardous constituents had occurred, to define the nature and extent of any releases, and to determine if a threat to human health or the environment exists from any releases.

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The RFI, approved by the U.S. EPA in September 1995, determined that no further action was required at the following SWMUs:

- # SWMU 2 - Old Tire Cord Wastewater Basin
- # SWMU 3 - Backwash Storage Pond
- # SWMU 4 - Sludge Drying Beds
- # SWMU 6 - Chemical Wastewater Piping System
- # SWMU 7 - Industrial Wastewater Piping System
- # SWMU 8 - Alloy Building Clarifying and Settling Tank

The RFI did determine that the following sites required further action: SWMU 1, the Abandoned Sludge Lagoon (ethylbenzene, toluene, xylenes, chlorobenzene, phthalate esters, arsenic, chromium, and mercury); SWMU 5, Parts Stripping Room Drum Storage Area (polynuclear aromatic hydrocarbons, arsenic, and chromium); and SWMU 9, Hydrofluoric Acid Neutralization Pit (1,1-DCE, 1,1,1-TCA, beryllium, and fluoride). Plans were submitted in 1994 recommending site stabilization measures for SWMUs 1 and 5. In 1995, SWMU 1 was excavated and the sludge and soil were properly disposed as non-hazardous material in a clay-lined trench in the off-site Owens Corning Landfill. SWMU 5 was excavated and the soil was properly disposed of as non-hazardous material in a permitted treatment, storage or disposal facility. SWMU 1 was backfilled in December 1995 after U.S. EPA acceptance of confirmation sampling data (Owens Corning 1995b). SWMU 5 was backfilled in March 1996 after U.S. EPA acceptance of confirmation sampling data (Owens Corning 1996a). SWMU 9 was over excavated in 1980 to support metals recovery. The area was then backfilled and paved with asphalt to support a truck loading/unloading area. The RFI determined that surface and subsurface soils at SWMU 9 were below cleanup criteria (likely as a result of the prior recovery action). SWMU 9 was identified as a source of chlorinated VOCs and fluoride in groundwater.

A draft Corrective Measures Study (CMS) was submitted to the U.S. EPA (Owens Corning 1996b) documenting the successful stabilization measures at SWMUs 1 and 5. A final CMS, prepared in 1998 to evaluate technologies for addressing groundwater impacts from SWMU 9, was submitted to U.S. EPA (Owens Corning 1998). Air sparge and soil vapor extraction were recommended in the Final CMS as the remedy for shallow groundwater at SWMU 9. However, more detailed evaluation suggests site conditions may impede implementability and effectiveness of this technology. Owens Corning is currently assessing other remediation strategies for SWMU 9. All known sources that may have affected groundwater have been removed.

Groundwater: Concentrations of 1,1-dichloroethene (DCE) and 1,1,1-trichloroethane (TCA) in groundwater are higher than their Safe Drinking Water Act, Maximum Contaminant Level (MCL) beneath portions of the site in overburden, top of rock, and bedrock wells (Owens Corning 2002a), and are the predominant constituents in groundwater at the site. Carbon tetrachloride, tetrachloroethene (PCE), 1,2-dichloroethane (DCA), vinyl chloride (VC) and methylene chloride also exceed their respective MCLs. The concentrations of all other VOCs were below health-based screening criteria in the November 2001 sampling event. Inorganic constituents detected above their respective MCLs in November 2001 include fluoride (up to 1,780 milligrams per liter [mg/L]), chromium, (up to 0.79 mg/L), and lead (up to 0.021 mg/L). 2001 groundwater quality data indicates that site-related constituents in downgradient monitoring wells are all below health-based screening criteria and that site-related constituents are not migrating off-site.

Air (indoor): In October 2001, Owens Corning submitted a revised Indoor Air Work Plan (Kestrel 2001a). The indoor air sampling was completed in the main building, in the vicinity of the highest VOC concentrations in groundwater (SWMU 9), and an evaluation report was submitted to the U.S. EPA, with a copy to South Carolina Department of Health and Environmental Control (SCDHEC) (Kestrel 2002a). Based on this report, the SCDHEC

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agreed with Owens Corning's determination that contamination of indoor air is not a problem at this site and no additional measures are necessary to address indoor air in the main plant building (SCDHEC 2002).

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Surface Soil (e.g. < 2 ft): Analytical data from surface soil samples collected at SWMUs 2, 3, 4, 6, and 7 indicate that no constituents are present above U.S. EPA Region IX residential or industrial Preliminary Remedial Goals (PRGs) (Owens Corning 1995a). In 1995, SWMUs 1 and 5 were excavated and the soils disposed of off-site. Confirmation sampling supported closure of these SWMUs. SWMU 1 was backfilled, graded to match the existing site topography and re-vegetated. SWMU 5 was backfilled and capped with asphalt. Therefore surface soil at SWMUs 1 and 5 do not pose a risk to human health. SWMU 9 was excavated in 1980 for metals recovery, backfilled, and paved over with asphalt. No impacts to surface soil were identified at SWMU 9 during the 1995 RFI. Thus, site stabilization measures at SWMUs 1 and 5 and reclamation activities at SWMU 9 have achieved surface soils that are protective of human health (Owens Corning 1998).

Surface Water: Groundwater containing VOCs (carbon tetrachloride, 1,1-DCE, and VC) is discharging to Betsy Creek as a diffuse plume and in the form of intermittent seeps. Betsy Creek originates in the northwest corner of the Owens Corning property, fed by surface water runoff from off-site and on-site sources and springs, and enters the Duck Pond in the north-central portion of the property. The Duck Pond also receives water generated from plant operations. Betsy Creek then discharges from the east side of the Duck Pond and flows through the northeast portion of the Owens Corning property. The Betsy Creek discharge from the Duck Pond is monitored under the sites National Pollutant Discharge Elimination System (NPDES) permit. Data from surface water sampling point SW-3B, collected in Betsy Creek downstream of the Duck Pond, have historically been below MCLs. A small amount of flow is attributed to what is believed to be an intermittent seep or spring along the north side of Betsy Creek, where surface water sample SW-3A is collected. This seep contains 1,1-DCE at a concentration of 0.175 mg/L in August 2001. This is also the only interval of the stream in which carbon tetrachloride and VC have been detected. Sample location SW-3 is slightly downgradient of SW-3A and SW-3B and represents the confluence of the main portion of Betsy Creek and the seep. Sampling at this location in July 2000 and August 2001 indicated all VOCs were below MCLs. As the stream crosses Keys Road on Owens Corning property at surface water sampling location SW-1, 1,1-DCE has been detected on two occasions (March 2000 and August 2001) at concentrations slightly above the MCL. However, by the time the stream reaches the Owens Corning property boundary at SW-6, all VOCs are below MCLs, as indicated in the last two sampling events in July 2000 and August 2001. During all three sampling events, VOCs were below MCLs further downgradient at SW-10 (Kestrel 2001b). During all surface water sampling events the concentration of VOCs has been below the U.S. EPA Region IV Surface Water Screening Criteria presented in the Ecological Risk Assessment Bulletins (U.S. EPA 1994).

Sediment: Sediment sampling during the RFI determined that VOCs were not present in sediment within Betsy Creek downgradient of Owens Corning's operations (one low detection of toluene was identified above the Duck Pond at a concentration below the screening criteria) and that arsenic was the only metal present in sediment above the screening criteria (Owens Corning 1995a). Sediments are not believed to be contaminated with VOCs above an appropriate risk-based level since the RFI sampling was conducted due to their chemical properties, including volatility, low adsorptive capacity and low propensity to bioaccumulate. In response to SCDHEC comments on the CMS (SCDHEC 1999), sediment samples were collected on July 31, 2000 at various depths (where they exist) from the same locations that surface water samples are collected, and analyzed for metals and polychlorinated biphenyls (PCBs). All metals and PCBs were below their Region IX residential PRGs with the exception of AROCHLOR 1248, which was below its Region IX industrial PRG and arsenic, which was below background arsenic concentrations for sediment (Kestrel 2000a). An investigation into the source of the PCBs was conducted and it was determined that the PCBs were most likely associated with heat transfer fluids previously used at the facility. The suspect heat transfer fluids have not been used since 1971; therefore, the source of PCBs is no longer present at the site. The sediment data were used to develop a human health risk assessment model to determine the amount of risk associated with the PCBs, namely Arochlor-1248 and Arochlor-1016, detected in the sediment. The RISC model indicated the reasonable maximum exposure for a trespasser presents a human health risk value of 3.4×10^{-8} for incidental ingestion and a value of 4.5×10^{-7} for dermal contact. The combined risk value of 4.8×10^{-7} is below the

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1x10⁻⁶ risk level indicating that the sediments in Betsy Creek do not pose a significant health risk to on-site trespassers (Kestrel 2002b).

Subsurface Soil (e.g., > 2 ft): During the RFI process, SWMUs 1 and 5 were identified as having subsurface soil contamination. In 1995, SWMU 1 was excavated and the soil was properly disposed of as non-hazardous material in a clay-lined trench in the Owens Corning Landfill and SWMU 5 was excavated and the soil was properly disposed of as non-hazardous material in a permitted treatment, storage or disposal facility. SWMU 1 was backfilled in December 1995 after EPA acceptance of confirmation sampling data (Owens Corning 1995b). SWMU 5 was backfilled in March 1996 after EPA acceptance of confirmation sampling data (Owens Corning 1996a). SWMU 9 was an earthen pit filled with limestone/dolomite and was used to neutralize hydrofluoric acid wastewaters (consisting of water, hydrofluoric acid, glass, iron, chromium, and platinum) from the old alloy production area. The pit was approximately 5 feet wide and 14 feet deep. In 1980, Owens Corning conducted a subsurface investigation of the pit to determine the feasibility of precious metal recovery. The metals were recovered by excavating the pit area. During the RFI, a soil sample was collected from boring MW-7 at a depth of 24.5 to 26.5 feet and analyzed for inorganics. Four metals were detected in this sample, but all were below twice the background concentration. No further soil remediation was recommended in the approved RFI. Based on the RFI results and the removal actions and recovery actions completed at the site to date, subsurface soils do not pose a significant risk to human health.

Air (outdoors): Based on ambient air monitoring (photo-ionization detector readings of zero), and the fact that VOCs are not present at elevated concentrations in shallow soil and the depth to groundwater is greater than 10 feet below land surface in the plant areas, VOCs in outdoor air are not a concern at the site.

References:

- Engineering Science, Inc. 1990a. RCRA Facility Investigation, Tasks I, II and III, Owens-Corning Anderson Plant, Anderson, South Carolina. July 1990.
- Engineering Science, Inc. 1991. Addendum to the RFI Work Plan, Owens-Corning Anderson Plant, Anderson, South Carolina. November 1991.
- Kestrel Management Services. 2001a. Modified Indoor Air Monitoring and Analysis Plan Owens Corning, Anderson, South Carolina. October 9, 2001.
- Kestrel Management Services. 2001b. Surface Water Assessment Report for Betsy Creek, Owens Corning, Anderson, South Carolina. September 2001.
- Kestrel Management Services. 2000a. Sediment Sampling for Owens Corning B Anderson, South Carolina. September 2000.
- Kestrel Management Services. 2002b. Analysis of Sediments in Betsy Creek near the Owens Corning Facility, Anderson, South Carolina. January 2002.
- Kestrel Management Services. 2002a. *Indoor Air Sampling Report for the Main Plant Building (Factory A, Owens Corning, Anderson, South Carolina* January 2002.

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- Owens-Corning Fiberglass Corporation. 1995a. Final RCRA Facility Investigation Report, Owens-Corning Anderson Plant, Anderson, South Carolina. December 4, 1995.
- Owens-Corning Fiberglass Corporation. 1995b. Letter from Stanley O'Grodnick (Owens Corning) to Ms. Rebecca Hoffman (U.S. EPA) memorializing U.S. EPA acceptance of confirmation sampling at SWMU 1. December 12, 1995.
- Owens-Corning Fiberglass Corporation. 1996a. Letter from O'Grodnick (Owens Corning) to Hoffman (U.S. EPA) memorializing U.S. EPA acceptance of confirmation sampling at SWMU 5. March 26, 1996.
- Owens-Corning Fiberglass Corporation. 1996b. Draft Corrective Measures Study Report, Owens Corning, Anderson, South Carolina. February 1996.
- Owens-Corning Fiberglass Corporation. 1998. Final Corrective Measures Study. June 1998.
- Owens Corning 2002a. 2001 Annual RCRA Groundwater Monitoring Report. January 2002.
- South Carolina Department of Health and Environmental Control. 1999. Letter from Bowers (SC DHEC) letter to Wilkie (SC DHEC) documenting review of the *Corrective Measures Study* dated June 1998. April 5, 1999.
- South Carolina Department of Health and Environmental Control. 2002. Letter from Wilkie (SC DHEC) to Bennett (U.S. EPA) accepting the data and recommendations in the Indoor Air Sampling Report, Owens Corning. January 14, 2002.
- United States Environmental Protection Agency. 1989. Final 3008 (h) Consent Order, Owens-Corning Facility, Anderson, South Carolina U.S. EPA Docket No.89-34-R. U.S. EPA Region IV, Atlanta, Georgia.
- United States Environmental Protection Agency. 1994. Region IV Ecological Risk Assessment Bulletin.
- United States Environmental Protection Agency. 1995. Letter from Farmer (U.S. EPA) to O'Grodnick (Owens Corning), Approval of Draft RCRA Facility Investigation. September 27, 1995.

Footnotes:

¹ "Contamination" and "contaminated" describes media containing contaminants (in any form, NAPL and/or dissolved, vapors, or solids, that are subject to RCRA) in concentrations in excess of appropriately protective risk-based "levels" (for the media, that identify risks within the acceptable risk range).

² Recent evidence (from the Colorado Dept. of Public Health and Environment, and others) suggest that unacceptable indoor air concentrations are more common in structures above groundwater with volatile contaminants than previously believed. This is a rapidly developing field and reviewers are encouraged to look to the latest guidance for the appropriate methods and scale of demonstration necessary to be reasonably certain that indoor air (in structures located above (and adjacent to) groundwater with volatile contaminants) does not present unacceptable risks.

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3. Are there **complete pathways** between "contamination" and human receptors such that exposures can be reasonably expected under the current (land- and groundwater-use) conditions?

Summary Exposure Pathway Evaluation Table

Potential **Human Receptors** (Under Current Conditions)

<u>"Contaminated Media"</u>	Residents	Workers	Day-Care	Construction	Trespassers	Recreation	Food ³
Groundwater	N	N	N	Y	N	N	N
Air (Indoor)							
Soil (surface, e.g., < 2 ft)							
Surface Water	N	N	N	N	Y	N	N
Sediment							
Soil (subsurface e.g., > 2 ft)							
Air (outdoors)							

Instructions for Summary Exposure Pathway Evaluation Table:

1. Strike-out specific Media including Human Receptors' spaces for Media which are not "contaminated" as identified in #2 above.
2. enter "yes" or "no" for potential "completeness" under each "Contaminated" Media -- Human Receptor combination (Pathway).

Note: In order to focus the evaluation to the most probable combinations some potential "Contaminated" Media - Human Receptor combinations (Pathways) do not have check spaces ("___"). While these combinations may not be probable in most situations they may be possible in some settings and should be added as necessary.

 Y If no (pathways are not complete for any contaminated media-receptor combination) - skip to #6 and enter "IN" status code.
Sheet to analyze major pathways).

 Y If yes (pathways are complete for any "Contaminated" Media - Human Receptor combination) - continue after providing supporting explanation.

If unknown (for any "Contaminated" Media - Human Receptor combination) - skip to #6 and enter "IN" status code.

Rationale and Reference(s):

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Since the VOCs of concern at the site are present beneath property owned and controlled by Owens Corning, complete exposure pathways do not exist for residents, day-care facilities, recreation, or agricultural operations.

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Groundwater: The local hydrogeology underlying the Owens Corning facility conforms to a model of groundwater flow in the Piedmont Province by LeGrand (1954, 1967, 1988) and Heath (1984). Perennial streams such as Betsy Creek represent discharge areas where groundwater flows to the surface as diffuse seepage or from springs. Shallow, local groundwater flow paths have developed which effectively move recharge from hill top areas to close-by permanent streams. The streams that bound each topographic ridge also are the drainage boundaries for groundwater. This model is supported by groundwater data from monitoring wells MW-16, MW-21, MW-25, TW-40, TW-41, TW-42, TW-43, and TW-44 located on the north side of Betsy Creek (Owens Corning 2002a). All constituents in these wells are below MCLs with the exception of arsenic in TW-43, which is naturally occurring in Piedmont soils.

The groundwater monitoring data indicate that the migration of VOCs detected in groundwater at the facility is limited to groundwater beneath property controlled by Owens Corning. The groundwater on this property controlled by Owens Corning is not used as a resource for potable and/or non-potable uses. Further, groundwater flow and quality data indicate that residents downgradient of the Owens Corning property are not being affected by site-related constituents in groundwater beneath the Owens Corning property. Therefore, contact with groundwater is not a complete exposure pathway for Owens Corning employees or area residents.

Future repairs on underground utilities at the site could make exposure to groundwater a potentially complete pathway for construction workers. However, in the area of the highest VOC concentrations (SWMU 9) the depth to groundwater is approximately 18 feet below land surface (bls) and the depth to groundwater in the mid-plant area (monitoring wells MW 20, MW-27, TW-45, TW-46) ranged from approximately 21 feet to 23.9 feet bls. The depth to water in the SWMU 9 and mid-plant areas make exposure to groundwater for future construction workers an unreasonable exposure pathway. For the area around Betsy Creek, where the depth to groundwater is between 3 feet and 6 feet bls, there are no underground utilities that may require unplanned excavation to support repairs and Owens Corning has no plans for construction in this area. Further, in the unlikely event that excavation is required in this area, the potential for exposure of construction workers to groundwater will be addressed by safety and health procedures, such as air monitoring and the use of proper personal protective equipment (PPE) during all subsurface work at the site (which is controlled by Owens Corning).

Surface Water: Groundwater containing VOCs discharges to Betsy Creek either as a diffuse subsurface plume or as intermittent seeps from an embankment on Owens Corning's property. The surface water in Betsy Creek is not used for potable purposes on or immediately downgradient of Owens Corning's property. Owens Corning workers do not come in contact with the water in Betsy Creek, except for NPDES sampling that is conducted upstream of the elevated VOC concentrations noted in Betsy Creek, and is accomplished using proper PPE. Therefore, a complete exposure pathway only exists for trespassers who might be walking this section of the creek or using the surface water for recreational purposes. A perimeter fence is present to guard against trespassing and recreational use of the section of Betsy Creek with the highest VOC concentrations and the downgradient portion of Betsy Creek that is on Owens Corning property is posted against trespassing. Additionally, the banks surrounding Betsy Creek are heavily vegetated, which further limits access to surface water on the site. Finally, due to the small size and nature of Betsy Creek, the use of this surface water for significant recreational purposes is not expected.

Based on this evaluation, only groundwater (construction workers only) and surface water (trespassers only) present a complete pathway that will be evaluated further in this EI form.

References:

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Heath, R.C., 1984. *Groundwater Regions of the United States*. U.S. Geological Survey Water-Supply Paper 2242, 78p.

LeGrand, H.E., 1954. Geology and Groundwater in the Statesville area, North Carolina, North Carolina Department of Conservation and Development Bulletin 68, 68 p.

LeGrand, H.E., 1967. *Groundwater of the Piedmont and Blue Ridge Provinces in Southeastern States*. U.S. Geological Survey Circular 538, 11 pp.

LeGrand, H.E., 1988. *Region 21 Piedmont and Blue Ridge*. In *Hydrogeology*, W. Black, J.S. Rosenshein, and P.R. Seaber, Eds. Geological Society of America, Boulder, CO. The Geology of North America.

Owens Corning 2002a. 2001 Annual RCRA Groundwater Monitoring Report. January 2002.

³ Indirect Pathway/Receptor (e.g., vegetables, fruits, crops, meat and dairy products, fish, shellfish, etc.)

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4. Can the **exposures** from any of the complete pathways identified in #3 be reasonably expected to be "**significant**"⁴ (i.e., potentially "unacceptable" because exposures can be reasonably expected to be: 1) greater in magnitude (intensity, frequency and/or duration) than assumed in the derivation of the acceptable "levels" (used to identify the "contamination"); or 2) the combination of exposure magnitude (perhaps even though low) and contaminant concentrations (which may be substantially above the acceptable "levels") could result in greater than acceptable risks)?

N If no (exposures can not be reasonably expected to be significant (i.e., potentially "unacceptable") for any complete exposure pathway) - skip to #6 and enter "YE" status code after explaining and/or referencing documentation justifying why the exposures (from each of the complete pathways) to "contamination" (identified in #3) are not expected to be "significant."

If yes (exposures could be reasonably expected to be "significant" (i.e., potentially "unacceptable") for any complete exposure pathway) - continue after providing a description (of each potentially "unacceptable" exposure pathway) and explaining and/or referencing documentation justifying why the exposures (from each of the remaining complete pathways) to "contamination" (identified in #3) are not expected to be "significant."

If unknown (for any complete pathway) - skip to #6 and enter "IN" status code

Rationale and Reference(s):

Groundwater: While the potential exists that a complete pathway for construction worker exposure to groundwater may occur in the future, this potential exposure can not be reasonably expected to be significant because; (1) safety and health procedures such as air monitoring and the use of proper PPE will be employed during all subsurface work at the site (which is controlled by Owens Corning) and (2) the depth to groundwater makes it unlikely that groundwater will be encountered under most utility repair projects.

Surface Water: The complete exposure pathway for recreational users of surface water is not reasonably expected to be significant for the following reasons. VOCs in groundwater discharging to surface water are highly volatile and would not be expected to remain in the surface water. Based on the data presented in the *Surface Water Assessment for Betsy Creek* (Kestrel 2001b), the seep located at SW-3A discharges groundwater containing VOCs to Betsy Creek, but data from the confluence of the seep and the tributary at SW-3 immediately downgradient of the seep indicates attenuation (dilution, volatilization, and photo oxidation processes) is reducing the constituent concentrations to levels below MCLs. Additionally, this area of Betsy Creek is surrounded by a fence which limits exposure to trespassers and recreational users, and Owens Corning personnel do not generally enter this area. The 1,1-DCE present in surface water at SW-1 along Keys Street on Owens Corning's property is only slightly above the MCL and attenuates prior to Betsy Creek leaving Owens Corning property. As this portion of Betsy Creek is not used for drinking water purposes, and no significant recreational use is expected, the presence of this VOC at such low concentrations does not suggest a significant risk to human health or the environment even if the trespasser exposure pathway is complete.

⁴ If there is any question on whether the identified exposures are "significant" (i.e., potentially "unacceptable") consult a human health Risk Assessment specialist with appropriate education, training

and experience.

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5. Can the "significant" **exposures** (identified in #4) be shown to be within **acceptable** limits?

If yes (all "significant" exposures have been shown to be within acceptable limits) - continue and enter "YE" after summarizing and referencing documentation justifying why all "significant" exposures to "contamination" are within acceptable limits (e.g., a site-specific Human Health Risk Assessment).

If no (there are current exposures that can be reasonably expected to be "unacceptable")- continue and enter "NO" status code after providing a description of each potentially "unacceptable" exposure.

If unknown (for any potentially "unacceptable" exposure) - continue and enter "IN" status code

Rationale and Reference(s):

Question skipped based on response to Question 4.

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6. Check the appropriate RCRIS status codes for the Current Human Exposures Under Control EI event code (CA725), and obtain Supervisor (or appropriate Manager) signature and date on the EI determination below (and attach appropriate supporting documentation as well as a map of the facility):

Y YE - Yes, "Current Human Exposures Under Control" has been verified. Based on a review of the information contained in this EI Determination, "Current Human Exposures" are expected to be "Under Control" at the Owens Corning Fiberglass facility, EPA ID # SCD 00379982 located at Highway 81 South, Anderson, SC under current and reasonably expected conditions. This determination will be re-evaluated when the Agency/State becomes aware of significant changes at the facility.

NO - "Current Human Exposures" are NOT "Under Control."

IN - More information is needed to make a determination.

Completed by (signature) _____ Date: _____
(print) Channing Bennett _____
(title) Environmental Scientist _____

Branch Chief (signature) _____ Date: _____
(print) Narindar Kumar _____
EPA Region 4 _____

Locations where References may be found:
Environmental Protection Agency, 61 Forsyth St., Atlanta, Ga, 30303

Contact telephone

(name) Jennifer Pearce
(phone #) (404) 562-8563

FINAL NOTE: THE HUMAN EXPOSURES EI IS A QUALITATIVE SCREENING OF EXPOSURES AND THE DETERMINATIONS WITHIN THIS DOCUMENT SHOULD NOT BE USED AS THE SOLE BASIS FOR RESTRICTING THE SCOPE OF MORE DETAILED (E.G., SITE-SPECIFIC) ASSESSMENTS OF RISK.

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Current Human Exposures Under Control
Environmental Indicator (EI) RCRIS Code (CA725)
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6. Check the appropriate RCRIS status codes for the Current Human Exposures Under Control EI event code (CA725), and obtain Supervisor (or appropriate Manager) signature and date on the EI determination below (and attach appropriate supporting documentation as well as a map of the facility):

Y YE - Yes, "Current Human Exposures Under Control" has been verified. Based on a review of the information contained in this EI Determination, "Current Human Exposures" are expected to be "Under Control" at the Owens Corning Fiberglass facility, EPA ID # SCD 00379982 located at Highway 81 South, Anderson, SC under current and reasonably expected conditions. This determination will be re-evaluated when the Agency/State becomes aware of significant changes at the facility.

 NO - "Current Human Exposures" are NOT "Under Control."

 IN - More information is needed to make a determination.

Completed by

(signature) 

Date: 7/24/02

(print) Channing Bennett

(title) Environmental Scientist

Branch Chief

(signature) _____

Date: _____

(print) Narindar Kumar

EPA Region 4

Locations where References may be found:

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Contact telephone

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VI. GROUNDWATER RELEASES CONTROLLED DETERMINATION (CA750)

There are five (5) status codes listed under CA750

- 1) YE Yes, applicable as of this date
- 2) NA Previous determination no longer applicable as of this date
- 3) NR No releases to groundwater
- 4) NO Facility does not meet definition
- 5) IN More information needed

The first three (3) status codes listed above were defined in January 1995 Data Element Dictionary for RCRIS. The last two (2) status codes were defined in June 1997 Data Element Dictionary.

The status codes for CA750 are designed to measure the adequacy of actively (e.g., pump and treat) or passively (e.g., natural attenuation) controlling the physical movement of groundwater contaminated with hazardous constituents above relevant action levels. The designated boundary (e.g., the facility boundary, a line upgradient of receptors, the leading edge of the plume as defined by levels above action levels or cleanup standards, etc.) is the point where the success or failure of controlling the migration of hazardous constituents is measured for active control systems. Every contaminated area at the facility must be evaluated and found to have the migration of contaminated groundwater controlled before a "YE" status code can be entered.

If contaminated groundwater is not controlled in any area(s) of the facility, the NO status code should be entered. If there is not enough information at certain areas to make an informed decision as to whether groundwater releases are controlled, then the IN status code should be entered. If an evaluation determines that there are both uncontrolled groundwater releases for certain units/areas (NO) and insufficient information at certain units/areas of groundwater contamination (IN), then the priority for the EI recommendation should be the NO status code.

In Region 4's opinion, the previous relevance of NA as a meaningful status code is eliminated by the June 1997 Data Element Dictionary's inclusion of NO and IN to the existing YE and NR status codes. In other words, YE, NR, NO and IN cover all of the scenarios possible in an evaluation or reevaluation of a facility for CA750. Therefore, it is Region 4's opinion that only YE, NR, NO and IN should be utilized to categorize a facility for CA750. No facility in Region 4

should carry a NA status code

This evaluation for CA750 is the first formal evaluation performed for Owens Corning. Please note that CA750 is based on the adequate control of all contaminated groundwater at the facility.

The following discussions, interpretations and conclusions on contaminated groundwater at the facility are based on the following reference documents: Daft RCRA Facility Investigation Report, dated April 1994, the 1997 Annual Groundwater Report, dated January 1998, and the Corrective Measures Study (6/98).

VII. STATUS CODE RECOMMENDATION FOR CA750:

Recommendation Option 3: CA750 NO; Releases to groundwater have occurred, and all groundwater releases at the facility are not controlled.

Based on the data contained in the documents referenced above and summarized in the groundwater portion of Section IV, releases from SWMUs and AOCs have contaminated groundwater at concentrations above action levels. Groundwater contamination is moving offsite.

Because all contaminated groundwater emanating from the facility is not controlled, it is recommended that CA750 NO be entered.

VIII. SUMMARY OF FOLLOW-UP ACTIONS

Currently Owens Corning is under Administrative Order No 89-34-R with US EPA Region IV to conduct corrective action work at the Anderson SC site. This order requires Owens Corning to carry out work detailed in the approved RFI Workplan and requires monthly progress reports to be submitted. A Final Corrective Measures Study (CMS) Report has been submitted by Owens Corning, 7/10/98. The Department plans to review this report and forward comments to EPA Region IV for a joint transmittal to Owens Corning. This CMS should ensure all media will be remediated adequately.